IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Re:	Application of:	Pierre BARBERIS et al.		
	Serial No.:	10/575,020	Confirmation No.:	7053
	Filed:	April 7, 2006		
	For:	**METHOD OF PRODUCING A FLAT ZIRCONIUM ALLOY PRODUCT, FLAT PRODUCT THUS OBTAINED AND A NUCLEAR PLANT REACTOR GRID WHICH IS MADE FROM SAID FLAT PRODUCT**		
	Art Unit:	1793		
	Examiner:	Weiping Zhu		
	Customer No.:	23280		
	Atty. Docket:	12467/9; 569.1015		

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

October 3, 2011

APPELLANT'S BRIEF UNDER 37 C.F.R. § 41.37

Sir:

Appellants submit this brief for the consideration of the Board of Patent Appeals and Interferences (the "Board") in support of their appeal of the Office Action dated February 1, 2011 in this application. The statutory fee of $540.00 is submitted concurrently herewith. If any additional fees are deemed to be due at this time, the Assistant Commissioner is authorized to charge payment of the same to Deposit Account No. 50-0552.

1. REAL PARTY IN INTEREST

The real party in interest is Compagnie Europeenne du Zirconium CEZUS, a French corporation having a place of business in Paris, France, and the assignee of the entire right, title and interest in the above-identified patent application. The invention was assigned to Compagnie Europeenne du Zirconium CEZUS by an assignment originating from inventors Pierre Barberis and Claude Simonot, on April 7, 2006 at reel 017871, frame 0526.

2. RELATED APPEALS AND INTERFERENCES

Appellants, their legal representatives, and assignee are not aware of any appeal or interference that directly affects, will be directly affected by, or will have a bearing on the Board's decision in this appeal.

3. STATUS OF CLAIMS

Claims 8, 9, 15 and 16 are pending in the application. Claims 8, 9, 15 and 16 were rejected in the Office Action dated February 1, 2011. Claims 1 to 7, 10 to 14 and 17 to 19 were canceled.

The rejections to claims 8, 9, 15 and 16 thus are appealed. A copy of appealed claims 8, 9, 15 and 16 is attached hereto as Appendix A.

4. STATUS OF AMENDMENTS

No additional amendments have been filed subsequent to the Office Action dated February 1, 2011.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

Independent claim 8 recites a process for producing a flat product (for example, Substitute Specification page 3, lines 21 and 31 to 36) made of a zirconium alloy having a

Kearns factor FT of between 0.30 and 0.70 (for example, Substitute Specification page 3, lines 21 to 24, page 3, line 22 to page 4, line 2, page 5, lines 11 to 20 and page 7, lines 14 to 19) consisting of: smelting a zirconium alloy having a composition, in percentages by weight, of Nb = 0.5 to 3.5%, Sn = 0 to 1.5%, Fe = 0 to 0.5%, Cr + V = 0 to 0.3%, S = 0 to 100 ppm, O = 0 to 2000 ppm, Si = 0 to 150 ppm, a balance being zirconium and impurities resulting from the smelting (for example, Substitute Specification page 5, line 38 to page 6, line 12); forming an ingot of the smelted zirconium alloy (for example, Substitute Specification page 6, lines 11 to 12); performing on the ingot at least one hot rolling pass in order to obtain a flat product (for example, Substitute Specification page 6, lines 12 to 14), a final of the hot-rolling passes being carried out between 900 and 1030°C and not being followed by any quenching operation (for example, Substitute Specification page 6, line 14 to page 7, line 5); annealing the flat product not exceeding a temperature of 800°C (for example, Substitute Specification page 7, lines 6 to 10); and performing at least one cold-rolling/annealing cycle on the flat product wherein the annealing cycle does not occur above 800°C to produce a flat product having a Kearns factor FT of between 0.30 and 0.70 (for example, Substitute Specification page 7, lines 7 to 19).

Independent claim 15 recites a process for producing a flat product (for example, Substitute Specification page 3, line 21 and lines 31 to 36) made of a zirconium alloy having a Kearns factor FT of between 0.30 and 0.70 (for example, Substitute Specification page 3, lines 21 to 24, page 3, line 36 to page 4, line 2, page 5, lines 11 to 20 and page 7, lines 14 to 19) consisting of: smelting a zirconium alloy having a composition, in percentages by weight, of Nb = 0.5 to 3.5%, Sn = 0 to 1.5%, Fe = 0 to 0.5%, Cr + V = 0 to 0.3%, S = 0 to 100 ppm, O = 0 to 2000 ppm, Si = 0 to 150 ppm, a balance being zirconium and impurities resulting from the smelting (for example, Substitute Specification page 5, line 38 to page 6, line 12); forming an ingot of the smelted zirconium alloy (for example, Substitute Specification page 6, lines 11 to 12); performing on the ingot at least one hot rolling pass in order to obtain a flat product (for example, Substitute Specification page 6, lines 12 to 14), a final of the hot-rolling passes being carried out between 900 and 1030°C and not being followed by any quenching operation (for example, Substitute Specification page 6, line 14 to page 7, line 5); and performing at least one cold-rolling/annealing cycle on the flat product wherein the annealing cycle does not occur above

800°C to produce a flat product having a Kearns factor FT of between 0.30 to 0.70 (for example, Substitute Specification page 7, lines 7 to 19).

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 8, 9, 15 and 16 were rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,544,361 B1 to Diz et al. (hereinafter "Diz").

7. ARGUMENTS

A. 35 U.S.C. §103(a) Rejections

Claims 8, 9, 15 and 16 were rejected under 35 U.S.C. §103(a) as unpatentable over Diz.

Diz discloses "a method for making flat, thin elements which consist of: producing a zirconium alloy blank also containing, besides the inevitable impurities, 0.8 to 1.3% of niobium, 100 to 1800 ppm of oxygen, and 10 to 35 ppm of sulfur; carrying out a β hardening and hot rolling to obtain a blank and performing on it at least three cold rolling passes with intermediate annealing heat treatments." (See Abstract). The final hot-rolling pass is carried out at a temperature between 770°C and 790°C. (Col. 3, lines 49 to 51).

Claim 8 Argued Separately

Claims 8 recites in part "[a] process for producing a flat product made of a zirconium alloy having a Kearns factor FT of between 0.30 and 0.70 **consisting of**:

smelting a zirconium alloy having a composition, in percentages by weight, of

Nb = 0.5 to 3.5%

Sn = 0 to 1.5%

Fe = 0 to 0.5%

Cr + V = 0 to 0.3%

S = 0 to 100 ppm

O = 0 to 2000 ppm

Si = 0 to 150 ppm, a balance being zirconium and impurities resulting from the smelting;

forming an ingot of the smelted zirconium alloy;

performing on the ingot at least one hot rolling pass in order to obtain a flat product, a final of the hot-rolling passes being carried out between 900 and 1030°C and not being followed by any quenching operation;

annealing the flat product not exceeding a temperature of 800°C; and

performing at least one cold-rolling/annealing cycle on the flat product wherein the annealing cycle does not occur above 800°C to produce a flat product having a Kearns factor FT of between 0.30 and 0.70."

It is respectfully submitted that Diz fails to teach or show the limitation of "a final of the hot-rolling passes being carried out between 900 and 1030°C" as required in claim 8. The Office Action admits the final hot rolling pass is carried out at 770-790°C. This is well below "between 900 and 1030°C," as claimed. The Office Action asserts on page 4 that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the final hot rolling temperature of Diz in order to achieve the desired microstructures and sizes required." However, there is no reason or motivation to modify the teachings of Diz, and even if there were a reason, there is no reason one of skill in the art would modify the final hot rolling temperature over other process steps. The final hot rolling process as claimed is conducted at 110°C higher than in Diz, a signification temperature difference. This 110°C difference forcibly leads to structural differences on the intermediate products of Diz as compared to that of the present invention, causing the intermediate products to react differently to similar subsequent treatment steps, in particular concerning the value of the FT Kearns factor.

Furthermore, claim 8 recites closed-ended language "consisting of," requiring that only the steps recited in the claim 8. Diz, however discloses additional substantial steps which are not recited in claim 8, including a "β hardening operation 12" (Col. 3, lines 47 to 48), which is not a claimed step and as such claim 8 is patentable for this reason as well.

Claim 8 specifically excludes performing any quenching operation after the at least one hot rolling pass, and the beta hardening operation of Diz includes beta quenching.

Finally, Diz fails to teach or show "a flat product having a Kearns factor FT of between 0.30 to 0.70," as required by claim 8. The Office Action, on page 4, admits that Diz does not

disclose the Kearns Factor FT as claimed. On page 2 of the Office Action the Examiner cites to Diz at col. 5, lines 6 to 9, as disclosing a Kearns factor of between 0.09 and 0.68, however this range cited in Diz is not for the FT Kearns factor claimed in the present invention. Rather the FT Kearns factor at the cited passage of Diz is 0.23, well below the claimed range. The FN and FL Kearns factors, 0.68 and 0.09 respectively in Diz, are irrelevant to the claim limitations of the present invention.

The Office Action asserts on page 4 that "the claimed and Diz's flat zirconium alloy products are identical or substantially identical in composition and are produced by identical or substantially identical processes as discussed above, therefore a prima facie case of obviousness exists. The same Kearns factor FT as claimed in the instant claims 8 and 15 would be expected in the flat zirconium alloy product of Diz."

First, this statement is flatly contradicted by Diz, which itself reports an FT Kearns factor of 0.23, well below the claimed range of 0.30 to 0.70. Thus, the products are not identical or "substantially identical." Second, as discussed above, substantially identical processes are not performed in Diz and the claimed invention. Diz fails to teach the step of "performing on the ingot at least one hot rolling pass in order to obtain a flat product, a final of the hot-rolling passes being carried out between 900 and 1030°C and not being followed by any quenching operation." Furthermore, claim 8 claims a process "consisting of" and Diz clearly includes an additional step of a "β hardening operation." Thus, Diz performs a different process then the process claimed, and results in a different composition. The Examiner provides no rationale, absent hindsight reconstruction based on applicant's disclosure to modify Diz to create the claimed process.

Based on the foregoing, reversal of the rejection of independent claim 8 under 35 U.S.C. §103(a) and dependent claim 9 is respectfully requested.

Claim 15 Argued Separately

Claims 15 recites in part "[a] process for producing a flat product made of a zirconium alloy having a Kearns factor FT of between 0.30 and 0.70 **consisting of**:

smelting a zirconium alloy having a composition, in percentages by weight, of

Nb = 0.5 to 3.5%

Sn = 0 to 1.5%

Fe = 0 to 0.5%

Cr + V = 0 to 0.3%

S = 0 to 100 ppm

O = 0 to 2000 ppm

Si = 0 to 150 ppm, a balance being zirconium and impurities resulting from the smelting;

forming an ingot of the smelted zirconium alloy;

performing on the ingot at least one hot rolling pass in order to obtain a flat product, a final of the hot-rolling passes being carried out between 900 and 1030°C and not being followed by any quenching operation; and

performing at least one cold-rolling/annealing cycle on the flat product wherein the annealing cycle does not occur above 800°C to produce a flat product having a Kearns factor FT of between 0.30 and 0.70."

It is respectfully submitted that Diz also fails to teach or show the limitation of "a final of the hot-rolling passes being carried out between 900 and 1030°C" as required in claim 15. The Office Action admits the final hot rolling pass is carried out at 770-790°C. This is well below "between 900 and 1030°C," as claimed. The Office Action asserts on page 4 that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the final hot rolling temperature of Diz in order to achieve the desired microstructures and sizes required." However, there is no reason or motivation to modify the teachings of Diz, and even if there were a reason, there is no reason one of skill in the art would modify the final hot rolling temperature over other process steps. The final hot rolling process as claimed is conducted at 110°C higher than in Diz, a signification temperature difference. This 110°C difference forcibly leads to structural differences on the intermediate products of Diz and that of the present invention, causing the intermediate products to react differently to similar subsequent treatment steps, in particular concerning the value of the FT Kearns factor.

Furthermore, claim 15 recites closed-ended language "consisting of," requiring that only the steps recited in the claim 15. Diz, however discloses additional substantial steps which are not recited in claim 15, including a "β hardening operation 12" (Col. 3, lines 47 to 48), which is not a claimed step and as such claim 15 is patentable for this reason as well.

Claim 15 specifically excludes performing any quenching operation after the at least one hot rolling pass, and the beta hardening operation of Diz includes beta quenching.

Finally, Diz fails to teach or show "a flat product having a Kearns factor FT of between 0.30 to 0.70," as required by claim 15. The Office Action, on page 4, admits that Diz does not disclose the Kearns Factor FT as claimed. On page 2 of the Office Action the Examiner cites to Diz at col. 5, lines 6 to 9, as disclosing a Kearns factor of between 0.09 and 0.68, however this range cited in Diz is not for the FT Kearns factor claimed in the present invention. Rather the FT Kearns factor at the cited passage of Diz is 0.23, well below the claimed range. The FN and FL Kearns factors, 0.68 and 0.09 respectively in Diz, are irrelevant to the claim limitations of the present invention.

The Office Action asserts on page 4 that "the claimed and Diz's flat zirconium alloy products are identical or substantially identical in composition and are produced by identical or substantially identical processes as discussed above, therefore a prima facie case of obviousness exists. The same Kearns factor FT as claimed in the instant claims 8 and 15 would be expected in the flat zirconium alloy product of Diz."

First, this statement is flatly contradicted by Diz, which itself reports an FT Kearns factor of 0.23, well below the claimed range of 0.30 to 0.70. Thus, the products are not identical or "substantially identical." Second, as discussed above, substantially identical processes are not performed in Diz and the claimed invention. Diz fails to teach the step of "performing on the ingot at least one hot rolling pass in order to obtain a flat product, a final of the hot-rolling passes being carried out between 900 and 1030°C and not being followed by any quenching operation." Furthermore, claim 15 claims a process "consisting of" and Diz clearly includes an additional step of a "β hardening operation." Thus, Diz performs a different process then the process claimed, and results in a different composition. The Examiner provides no rationale, absent hindsight reconstruction based on applicant's disclosure to modify Diz to create the claimed process.

Based on the foregoing, reversal of the rejection of independent claim 15 under 35 U.S.C. §103(a) and dependent claim 16 is respectfully requested.

CONCLUSION

It is respectfully submitted that the application is in condition for allowance. Favorable consideration of this appeal brief is respectfully requested.

Respectfully submitted,

DAVIDSON, DAVIDSON & KAPPEL, LLC

By: _____

William C. Gehris, Reg. No. 38,156

DAVIDSON, DAVIDSON & KAPPEL, LLC
485 Seventh Avenue, 14th Floor
New York, NY 10018
Tel: (212) 736-1940
Fax: (212) 736-2427

APPENDIX A:

PENDING CLAIMS 8, 9, 15 and 16 OF U.S.
APPLICATION SERIAL NO. 10/575,020

Claim 8 (previously presented): A process for producing a flat product made of a zirconium alloy having a Kearns factor FT of between 0.30 and 0.70 consisting of:

smelting a zirconium alloy having a composition, in percentages by weight, of

Nb = 0.5 to 3.5%

Sn = 0 to 1.5%

Fe = 0 to 0.5%

Cr + V = 0 to 0.3%

S = 0 to 100 ppm

O = 0 to 2000 ppm

Si = 0 to 150 ppm, a balance being zirconium and impurities resulting from the smelting;

forming an ingot of the smelted zirconium alloy;

performing on the ingot at least one hot rolling pass in order to obtain a flat product, a final of the hot-rolling passes being carried out between 900 and 1030°C and not being followed by any quenching operation;

annealing the flat product not exceeding a temperature of 800°C; and

performing at least one cold-rolling/annealing cycle on the flat product wherein the annealing cycle does not occur above 800°C to produce a flat product having a Kearns factor FT of between 0.30 and 0.70.

Claim 9 (previously presented): The process according to claim 8, wherein the Nb content of the alloy is from 0.5 to 1.5%.

Claim 15 (previously presented): A process for producing a flat product made of a zirconium alloy having a Kearns factor FT of between 0.30 and 0.70 consisting of:

smelting a zirconium alloy having a composition, in percentages by weight, of

Nb = 0.5 to 3.5%

Sn = 0 to 1.5%

Fe = 0 to 0.5%

Cr + V = 0 to 0.3%

S = 0 to 100 ppm

O = 0 to 2000 ppm

Si = 0 to 150 ppm, a balance being zirconium and impurities resulting from the smelting;

forming an ingot of the smelted zirconium alloy;

performing on the ingot at least one hot rolling pass in order to obtain a flat product, a final of the hot-rolling passes being carried out between 900 and 1030°C and not being followed by any quenching operation; and

performing at least one cold-rolling/annealing cycle on the flat product wherein the annealing cycle does not occur above 800°C to produce a flat product having a Kearns factor FT of between 0.30 to 0.70.

Claim 16 (previously presented): The process according to claim 15, wherein the Nb content of the alloy is from 0.5% to 1.5%.

APPENDIX B

Evidence Appendix under 37 C.F.R. §41.37(c)(ix):

No evidence pursuant to 37 C.F.R. §§1.130, 1.131 or 1.132 and relied upon in the appeal has been submitted by appellants or entered by the examiner.

APPENDIX C

Related proceedings appendix under 37 C.F.R. §41.37(c)(x):

As stated in "2. RELATED APPEALS AND INTERFERENCES" of this appeal brief, appellants, their legal representatives, and assignee are not aware of any appeal or interference that directly affects, will be directly affected by, or will have a bearing on the Board's decision in this appeal.